Appendix to the IPER

WHAT IS CLAIMED IS

1. A continuous process for the manufacture of MTPA, characterized in that:

(a) a vapor-phase oxidation (101) of propylene is carried out using a catalyst, so as to obtain a crude acrolein-based product (105),

(b) acids present in the crude product (105) obtained in the preceding stage are removed (106),

(c) the product obtained in the preceding stage is absorbed (110) with water, so as to obtain an aqueous acrolein solution (2),

(d) said solution (2) is purified, so as to obtain purified gaseous acrolein (12), and

(e) the purified gaseous acrolein obtained in the preceding stage is reacted (115) with MSH, that is to say methyl mercaptan, so as to obtain MTPA,

and the "noncondensable" gases originally present in the crude product (105) resulting from oxidation stage (a) are separated before stage (e).

2. The process as claimed in claim 1, characterized in that the separation of the "noncondensable" gases is carried out before purification stage (d).

3. The process as claimed in claim 2, characterized in that the separation of the "noncondensable" gases is carried out during stage (b) and/or stage (c).

4. The process as claimed in claim 3, characterized in that the separation of the "noncondensable" gases is carried out during stage (c).

5. The process as claimed in claim 1, characterized in that the "noncondensable" gases are recycled to oxidation stage (a).

6. The process as claimed in claim 1, characterized in that the "noncondensable" gases are discharged and incinerated.

7. A continuous process for the manufacture of MTPA, characterized in that:

(a) a vapor-phase oxidation (101) of propylene is carried out using a catalyst, so as to obtain a crude acrolein-based product (105),

(b) acids present in the crude product (105) obtained in the preceding stage are removed (106),

(c) the product obtained in the preceding stage is absorbed (110) with water, so as to obtain an aqueous acrolein solution (2) separated from the "noncondensable" gases,

(d) said solution (2) is purified, so as to obtain purified gaseous acrolein, and

(e) the purified gaseous acrolein obtained in the preceding stage is reacted (115) directly with MSH, that is to say methyl mercaptan, so as to obtain MTPA.

8. The process as claimed in claim 1 or 7, characterized in that stage (e) is carried out between MSH and acrolein maintained in the gas phase.

9. The process as claimed in claim 1 or 7, characterized in that stage (d) of purification of the aqueous acrolein solution (2) is carried out according to the following process:
   - the aqueous acrolein solution is introduced into a distillation column (1) equipped at its base with at least one boiler and at its top with at least one condenser (7),
   - a liquid mixture essentially comprising water is withdrawn (4) at the base of the distillation column,
   - a gas mixture essentially comprising acrolein and water is withdrawn (6) at the top (5) of the distillation column,
   - the gas mixture (6) withdrawn at the top of the distillation column is cooled, in the condenser, to a temperature which makes it possible to obtain, on the one hand, an aqueous condensate (13) and, on the other hand, an acrolein-rich gas mixture (12), and
   - the acrolein-rich gas mixture is withdrawn (12).

10. The process as claimed in claim 9, characterized in that the aqueous acrolein solution (2) has a concentration of acrolein of less than or equal to the solubility limit of acrolein in water.

11. The process as claimed in claim 9, characterized in that the distillation column (1) is maintained at a pressure P and in that the temperature in the condenser (7) is maintained at a value T according to the equation $T>21.28*P+32.9$.

12. The process as claimed in claim 11, characterized in that the column (1) is maintained at atmospheric pressure and the temperature in the condenser is maintained at a value of greater than

54°C, preferably ranging from 55 to 70°C, especially ranging from 60 to 65°C.

13. The process as claimed in claim 1, characterized in that the acrolein-rich gas mixture (2) has an acrolein concentration ranging from 86 to 95% by weight, preferably from 88 to 94% by weight, especially from 90 to 93% by weight.

14. The process as claimed in claim 1, characterized in that the condensate (13) is at least partially reintroduced into the distillation column (1).

15. The process as claimed in claim 14, characterized in that all of the condensate (13) is reintroduced at the top of the distillation column (1).

16. A process for the purification of acrolein, in which:

- an aqueous acrolein solution is introduced (2) into a distillation column (1) equipped at its base with at least one boiler and at its top with at least one condenser (7),
- a liquid mixture comprising water is withdrawn (4) at the base of the distillation column,
- a gas mixture comprising acrolein is withdrawn (6) at the top of the distillation column,
- the gas mixture (6) withdrawn at the top of the distillation column is cooled, in the condenser, to a temperature which makes it possible to obtain, on the one hand, an aqueous condensate (13) and, on the other hand, an acrolein-rich gas mixture (12), and
- said gas mixture is withdrawn,

characterized in that the distillation (1) is determined in order to obtain, at the base of the column (1), a nonazeotropic liquid mixture essentially comprising water and the condensation

(7) is determined in order to obtain an aqueous condensate (13) substantially depleted in acrolein and a gas mixture (12) substantially enriched in acrolein.

17. The process as claimed in claim 16, characterized in that obtained at the column top comprises, by volume, between 30% and 70% and preferably between 40% and 60% of water.